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**Packaging Bag**

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## Packaging Bag

The invention relates to a packaging bag with a front wall and a rear wall made of a packaging film, in which the front wall and the rear wall are bonded together along a peripheral edge and the front wall and/or the rear wall is printed on the outside of the bag. The invention further relates to a procedure for the manufacture of such a packaging bag.

- 10 The packaging bag of the type described above is used amongst other applications for the packing of medications in the form of tablets or powder. Normally, both sides of a bag are printed with information aimed at the consumer. The information prescribed by health and pharmaceuticals authorities for printing on medication
- 15 packaging is increasing all the time. Therefore in the case of small packages the printed area is often not sufficient for all information to be applied to the packaging in a legible type size.
- 20 An obvious solution to enlarge the printable area is the enlargement of the packaging. However, in addition to higher material costs, a larger bag necessitates new tools and further changes to an existing packing line.
- 25 The invention is based upon the task of enlarging the printable area on a packaging bag of the type mentioned initially whilst maintaining the same bag dimensions.

A further object of the invention is to provide a process

30 suitable for the manufacture of the packaging bag.

The solution of the task regarding the packaging bag in accordance with the invention provides that on the outside of the bag the front wall and/or the rear wall is bonded to a cover film

35 which is printed on one or both sides, substantially the entire area of which is bonded to and peelable from the front wall or

rear wall.

In the arrangement of cover films in accordance with the invention, the number of printable pages increases from the original number of two to a maximum of six if a cover film is arranged on each side of the bag, and in addition to the printed packaging films on the front and rear of the bag, both sides of the cover films are also printed.

Since substantially the entire area of the cover film is bonded to the packaging film and thus forms a composite film with the packaging film, the packaging film bonded to the cover film can be processed into packaging bags in the same manner as a conventional packaging film and without significant machine adjustments on the packing line.

The packaging bag in accordance with the invention can be constructed such that the front wall consists of a first packaging film and the rear wall consists of a second packaging film. The cover film can be arranged on one or both packaging films as required.

In a different embodiment of the packaging bag in accordance with the invention the front wall and the rear wall consist of the same packaging film which is folded and bonded to the cover film.

Suitably, the cover film is permanently bonded to the packaging film in an edge area.

A first process suitable for the manufacture of the packaging bag according to the invention is characterised by the following steps:

- A. one or two-sided printing of a first cover film web,
- B. coating of one side of the first cover film web with a first plastic layer,

- C. joining the first cover film web by way of the first plastic layer to the printed side of a first packaging film web to form a peelable bond,
- D. joining the first packaging film web bonded to the first cover film web to a second packaging film web.
- E. bonding the first packaging film web to the second packaging film web along peripheral edges.

A second process suitable for the manufacture of the packaging bag according to the invention is characterised by the following steps:

- A. one or two-sided printing of a first cover film web,
- B. coating of one side of the first cover film web with a first plastic layer,
- C. joining the first cover film web by way of the first plastic layer to the printed side of a first packaging film web to form a peelable bond,
- D. one or two-sided printing of a second cover film web,
- E. coating of one side of the second cover film web with a second plastic layer,
- F. joining the second cover film web by way of the second plastic layer to the printed side of a second packaging film web to form a peelable connection,
- G. joining the first packaging film web bonded to the first cover film web to the second packaging film web bonded to the second cover film web,
- H. bonding the first packaging film web to the second packaging film web along peripheral edges.

A third process suitable for the manufacture of the packaging bag according to the invention is characterised by the following steps:

- A. one or two-sided printing of a first cover film web,
- B. coating of one side of the first cover film web with a first

plastic layer,

- C. joining the first cover film web by way of the first plastic layer to the printed side of a first packaging film web to form a peelable bond,
  - 5 D. folding the packaging film web bonded to the cover film web in the web feed direction,
  - E. bonding the folded packaging film web to itself along peripheral edges.
- 10 Substantially all known packaging materials can be used as packaging and cover films. The packaging materials should be suitable for use in packaging machines. Examples of suitable materials are single or multi-layered films made of plastics or paper, possibly with barrier layers, and plastic films coated on
- 15 one or both sides with paper or metal films.

Examples of plastics that can be used are polyolefins such as polyethylene or polypropylene, polyamide, polyvinylchloride or polyester in the form of a monofilm or a composite film or using

20 a laminate of various plastics in the form of multi-layer composite films. Metallic or ceramic barrier layers for example can be arranged between at least two layers.

Plastic films can be transparent, translucent or opaque. They can

25 be applied to a further film or paper by extrusion or in the form of a film or lacquer.

The packaging films are preferably coated with a sealing layer on the inward-facing side of the bag made out of the films, for

30 example using a sealing lacquer or a sealing film, e.g. of polyolefins such as polyethylenes.

The peelable bond between packaging and cover film can be made for example in a well known manner by cold sealing of suitable

35 coating materials or with a permanent adhesive based on polyurethane having a low adhesive power.

Adhesives based upon polyurethane for example are suitable permanent adhesives for bonding the cover films to the packaging film in the edge area of the bag.

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Further advantages, features and details of the invention are found in the following description of preferred design examples and on the basis of the drawing; the drawings show:

- Fig. 1 the top view of the front of a packaging bag;
- 10 - Fig. 2 a section through the packaging bag of Fig. 1 along line 1-1;
- Fig. 3 the section of Fig. 2 with detached cover films;
- Fig. 4 an enlarged detail of Fig. 3;
- Fig. 5 a perspective view of the packaging bag of Fig. 1 with
- 15 detached cover films;
- Fig. 6 a longitudinal section through a first arrangement of film webs for the manufacture of packaging bags;
- Fig. 7 a top view of the packaging bag formed by bonding the packaging film webs of Fig. 6;
- 20 - Fig. 8 a longitudinal section through a second arrangement of film webs for the manufacture of packaging bags;
- Fig. 9 the top view of the bonded film webs of Fig. 8;
- Fig. 10 the top view of the packaging bag formed by folding the bonded film webs from Fig. 9.

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A packaging bag 10 shown in Fig. 1 and 2, with a square shape and an edge length of e.g. 70 mm, has a front wall 12 made of a first packaging film 16a and a rear wall 14 made of a second packaging film 16b. The front wall 12 and the rear wall 14 have a sealable

30 internal coating 26a,b and are bonded together along a peripheral edge 18 by a seal and border a bag interior 30 with contents 32 in the form of tablets.

The front wall 12 of the packaging bag 10 is bonded to a first

35 cover film 20a by means of a peelable adhesive layer 28a. In the same manner the rear wall 14 is bonded to a second cover film 20b

by means of a peelable adhesive layer 28b. With the exception of a pull tab 22a,b located in an edge area, the two cover films 20a,b bond by way of the peelable adhesive layer 28a,b over their entire area to the packaging film 16a,b. At the end of the packaging bag remote from the pull tab 22a,b, the cover films 20a,b are permanently bonded to the underlying packaging film 16a,b by way of an edge strip 24a,b made of a permanent adhesive. As shown in Figs. 3 and 4, by pulling on the pull tabs 22a, b the cover films 20a,b can be released from the front wall 12 or the rear wall 14 of the packaging bag 10 up to the edge strip 24a,b without detaching them from the bag.

As can be seen from Fig. 5 in particular, when the cover films 20a,b are pulled away from the front wall 12 or the rear wall 14 of the packaging bag 10, a total of six pages are created, bound in the manner of a book - namely the front and back of the first cover film 20a, the outside of the front wall 12 and the outside of the rear wall 14 of the packaging bag 10, and the front and back of the second cover film 20b. Each of these pages can be printed.

The manufacture of packaging bags 10 with print on all pages is explained below with reference to Figs. 6 to 10.

In a first process shown in Figs. 6 and 7, a first cover film web 40a is printed on both sides in a printing station 34a, coated on one side with the peelable adhesive 28a in a coating station 36a, and, in an application station 38a, coated with permanent adhesive according to the pattern of the edge strips 24a. The first cover film web 40a coated in this manner is bonded by means of the peelable adhesive layer 28a to a first packaging film strip 42a which is printed on both sides and has a sealable internal coating 26a.

In the same manner a second cover film web 40b is printed on both sides in a printing station 34b, coated on one side with a

peelable adhesive 28b in a coating station 36b, and, in an application station 38b, coated with permanent adhesive according to a pattern of the edge strips 24b. The first cover film web 40b coated in this manner is bonded by means of the peelable adhesive layer 28b to a second packaging film web 42b which has a sealable internal coating 26b and is printed on both sides.

The two packaging film webs 42a,b, each bonded to a cover film web 40a,b, are brought together in a packaging machine. After the contents have been inserted, the coated packaging film webs 40a,b are further processed by sealing along the peripheral edges 18 and separation of the formed packaging bags 10.

In a second process shown in Figs. 8 to 10, a cover film web 20 is printed on both sides in a printing station 34, coated on one side with the peelable adhesive 28 in a coating station 36 and coated in an application station 38 with permanent adhesive according to a pattern of the edge strips 24. The cover film web 40 coated in this manner is bonded by means of the peelable adhesive layer 28 to a packaging film web 42 which is printed on both sides and has a sealable internal coating 26. The width of the packaging film web 42 corresponds to twice the side length of a packaging bag 10.

The packaging film web 42 is folded in a packaging machine about fold axis f lying in the centre of the packaging film web and running in the web feed direction. After the contents have been added, the coated packaging film web is further processed by sealing along the peripheral edges 18 and separation of the formed packaging bags 10.

It is self-evident that all printing of the cover film webs and the packaging film webs and also the application of the permanent adhesive pattern must be performed using the register printing process. The precise matching of the individual film webs must also be controlled using printing marks.